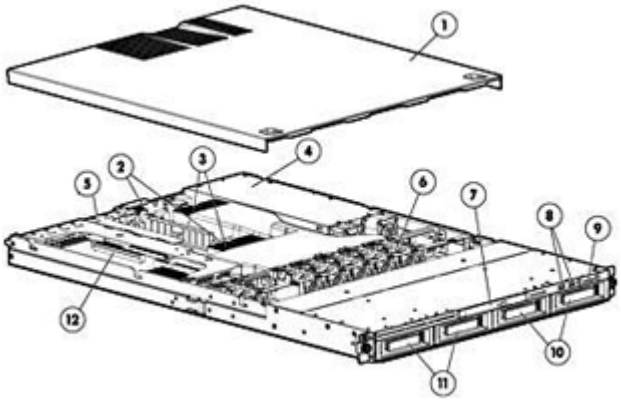
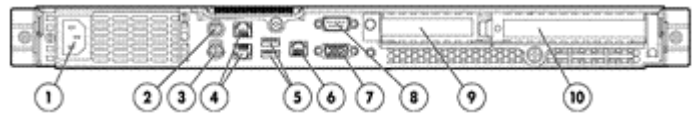
Overview

Hot Plug SAS/SATA or Non-Hot Plug SATA Models





Front View:

1. Access panel
2. Memory banks
3. Two (2) AMD Opteron 2300 series processors
4. Power supply
5. PCI-E expansion riser
6. System fans
7. Optical drive bay
8. Front-panel USB 2.0 ports
9. Power switch/system status LEDs
10. Optional 3rd and 4th 3.5" hot-plug SAS/SATA or non-hot plug SATA hard drive bays
11. Standard 1st and 2nd 3.5" hot-plug SAS/SATA or non-hot plug SATA hard drive bays
12. Full height/full length PCI-Express or HTX slot

Rear View:

1. Power supply cable socket
2. PS/2 mouse port
3. PS/2 keyboard port
4. Two (2) RJ45 GbE LAN ports
5. Rear panel USB 2.0 ports
6. Lights-Out 100 10/100Mbps port
7. Video port
8. Serial port
9. Low-profile slot cover (slot only accessible in G5 system)
10. Full-sized riser board assembly slot cover

What's New

- Support for SATA Hot Plug 3.5" Midline (MDL) Solid State Drives
- Support for SAS Hot Plug 3.5" Enterprise (ENT) Hard Drives

At A Glance

Introducing the HP ProLiant DL165G5p, now available with the latest high performance Opteron Quad Core processors, increased storage by 2X and a new high efficiency power supply option.

- Processors:
  - Supports up to two AMD Opteron™ 2300 series Quad-Core processors
  - Supports DirectConnect Architecture
  - Supports Power Now
- Memory:
  - 16 DIMM slots supporting up to 64GB REG PC2-6400 DDR2-800 MHz memory with Advanced ECC
  - 16 DIMM slots supporting up to 128GB REG PC2-5300 DDR2-667 MHz memory with Advanced ECC
- Internal Drive Support:

Overview

- Internal storage capacity:
  - SATA Capacity: Support for up to 4.0TB (4 x 1TB) in Hot Plug Model. Support for up to 3.0TB (4x750GB) in Non Hot Plug Model.
  - SAS Capacity: Support for up to 4.0 TB (4 x 1TB) in Hot Plug Model
  - NOTE: Installation of the Hot Plug Backplane 1U 2S Kit (445985-B21) is required if ordering third or fourth Hard Drives for Hot Plug models only.

- Network Controller:
  - Embedded HP NC362i Integrated Dual Port Gigabit Server Adapter
- Storage Controllers:
  - Non-Hot Plug SATA Models: HP Embedded SATA Controller
  - Hot Plug SATA/SAS Models: HP SC40Ge SAS HBA with RAID 0,1
    NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.
- Expansion Slots:
  - Standard - PCI-Express assembly includes:
    - Slot 1: full-length/full height PCI-Express x16
- Infrastructure Management:
  - HP ProLiant Lights Out 100i Remote Management support (IPMI 2.0 and SMASH support)
  - Virtual Media plus Virtual KVM support with LO100i Advanced license
  - HP Insight Control for Linux (IC-Linux), a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, control and optimize your IT infrastructure through a single, simple management console. HP Insight Control for Linux supports Linux-based servers and management consoles.
- USB Ports:
  - Up to five USB ports (two front & two rear standard, 1 internal option)
- Optical Drive:
  - Support for one (optional): DVD-ROM, DVD/CD RW
- Power Supply:
  - 650W Power Supply standard (Non-Hot Plug, Autoswitching)
- Form Factor:
  - Rack (1U)
  - Fixed mounting rails included with all models
- Deployment/Serviceability:
  - Tool-less access to all system components for easy in-rack serviceability
  - Customer Self Repair (CSR): HP products are designed with many CSR parts to minimize repair time and allow for greater flexibility in performing defective parts replacement
- Warranty:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for one year from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
    NOTE: Server Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
    http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor One of the following depending on Model	AMD Opteron™ processor Model 2393SE (3.1GHz, 105W ACP) AMD Opteron™ processor Model 2389 (2.9GHz, 75W ACP) AMD Opteron™ processor Model 2384 (2.7GHz, 75W ACP) AMD Opteron™ processor Model 2381HE (2.5GHz, 55W ACP) AMD Opteron™ processor Model 2380 (2.5GHz, 75W ACP) AMD Opteron™ processor Model 2377EE (2.3GHz, 50W ACP) AMD Opteron™ processor Model 2376 HE (2.3GHz, 55W ACP) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. AMD Opteron™ processor Model 2376 (2.3GHz, 75W ACP) AMD Opteron™ processor Model 2374 HE (2.2GHz, 55W ACP)		
Upgradeability	Upgradeable to two processors		
Chipset	ServerWorks HT2100 and HT1000		
Cache Memory	6MB shared L3 cache		
Memory Protection	Advanced ECC		
Memory One of the following depending on Model	Type	REG PC2-6400 DIMMs (DDR2-667) REG PC2-5300 DIMMs (DDR2-667) NOTE: DIMM banks are active only when the corresponding processor socket is populated.	
	Standard (Model 2376)	2 GB	(2 x 1 GB)
	Standard (Model 2380)	4 GB	(2 x 2 GB)
	Standard (Model 2384)	8 GB	(4 x 2 GB)
	Maximum	64 GB	(16 x 4 GB)
Network Controller	Embedded NC362i dual-port gigabit server adapter		

Standard Features

Expansion Slots #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
1	PCI Express	x16	x16	3	Full Height/Full Length	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.

** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).

Storage Controller	Non-Hot Plug SATA	HP Embedded SATA Controller
	Hot Plug SATA/SAS	HP SC40Ge SAS HBA with RAID 0,1 NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.

NOTE: A diskette drive is needed to install storage controller drivers during a Windows operating system installation from CD.

Storage	Diskette Drives	Via USB only
	Optical Drives	Optional 8x IDE (ATAPI) DVD-ROM drive, slim
		Optional 24x IDE (ATAPI) DVD-ROM/CDRW drive
	Hard Drives	Up to 4 Non-hot plug SATA 3.5" drives
		Up to 4 Hot plug SATA /SAS 3.5" drives

Maximum Internal Storage	Non-Hot Plug SATA	3.0TB	4 x 750GB
	Hot Plug SATA	4.0TB	4 x 1TB
	Hot Plug SAS	4.0TB	4 x 1TB

Interfaces	Parallel	None
	Network RJ-45(Ethernet)	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB	Up to 5 (two front & two rear standard, 1 internal option) NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html.

Graphics	32MB shared supporting 1600x1200x16M resolution
Form Factor	Rack (1U), (1.75 in/4.45 cm)

Standard Features

Remote Management	Lights-Out 100i	HP Lights-Out 100i Remote Management delivers affordable, entry level remote management capabilities for HP ProLiant 100 Series servers with embedded LO100i. It allows customers or their service providers to remotely manage ProLiant 100 Series servers remotely over a LAN or the Internet and consists of the following: • LO100i Standard is embedded remote management and provides basic remote control via telnet, browser, and IPMI 2.0 and SMASH and comes standard on all DL100 series servers except for the DL180 G1 and G5 and the DL120 G5 servers. • LO100i Advanced Pack License are upgrades for essential, secure, remote control, serial console and virtual media plus Virtual KVM (graphical hardware-based, remote console). NOTE: Flexible and volume quantity (AKA) license kits are available for the Lights-Out 100i Advanced Pack licenses as well as Electronic License To Use (E-LTU). AKA Tracking licenses require a 100 unit minimum forecast at initial contract signing. For these additional part numbers, please refer to each software products. QuickSpecs at this link for more information: www.hp.com/go/lo100
Core Infrastructure Management	HP Insight Control for Linux	HP Insight Control for Linux, as a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. The Insight Control for Linux suite installs and license software modules that are integrated into HP System Insight Manager. The HP Insight Control suite for Linux (IC-Linux) serves environments requiring a Linux-based management consoles. See www.hp.com/go/ic-linux HP Insight Control suites include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: www.hp.com/services/insight.
	Insight Control server deployment	HP Insight Control server deployment is a deployment solution for HP ProLiant and Integrity servers hosted on a Windows CMS. It automates the process of deploying and provisioning server software, enabling companies to quickly and easily adapt to changing business demands. Insight Control server deployment includes software optimizations for HP servers, including the HP scripting toolkits, configuration jobs for leading industry-standard operating systems, sample unattended files, and HP server support packs that include software drivers, management agents, and important documentation. Deploying servers can be accomplished either through imaging or through scripting. Insight Control server deployment is hosted on a Windows server and is intended for heterogeneous environments deploying Windows, Linux, VMware ESX and Microsoft Hyper-V systems. Insight Control server deployment includes one year of 24 x 7 HP Software

Standard Features

	Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.
Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support Microsoft® Logo certifications IPMI 2.0, SMASH CLP Compliant
Manageability	Embedded HP ProLiant Lights-Out 100i Remote Management, with licensable upgrades to Lights-Out 100i Advanced.
Security	Power-on password Setup password
UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.
Power Supply	650 Watts, auto-switching, PFC (Power Factor Correcting)
System Fans	6 system fans ship standard; non-hot plug, non-redundant
Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Microsoft Windows Server Hyper-V Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Solaris 10 for x86/x64 based Systems NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/supportos our driver download page http://www.hp.com/support/DL165G5p

Standard Features

Rack Airflow Requirements	Rack 10000 G2 series Cabinets The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 G2 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors. CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment: Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches) CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.
Rack Support	The DL Fixed Rail System supports installation in racks with square or round mounting holes (including Compaq/HP 7000, 9000, 10000 and HP series), with an adjustment range of 24" - 36".
Telco Rack Kit	Installation into Telco 2 post, and 4 post, or threaded holes racks requires a 3rd party option kit. For additional information, please visit: www.hp.com/go/rackandpower.
HP Factory Express Capability	HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches. For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.
HP Enterprise Configurator	The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.

Standard Features

Service and Support

HP Care Pack Services provide total care and support expertise with committed response designed to meet your IT and business needs.

HP Care Pack services include coverage for the HP branded hardware options qualified for the server that are purchased at the same time or afterward and internal to the enclosure. It also includes the 22" and smaller external monitors and tower UPS options up to 3kVA. These items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included and standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

To fully capitalize on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a ProLiant server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - Simplify ProLiant solution implementation, maintenance and management.

- Support Service -3 Year, 9x5 Next Business Day coverage, excluding HP holidays only
- Deployment Service - Hardware Installation only

Enhanced Service - Optimize service level to increase IT performance and availability

- Support Service - 3 Year 13x5 Same Business Day, 4-Hour response coverage
- Deployment Service - Installation and Start-up only

Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays.

For a complete listing of service offerings and information visit:
http://www.hp.com/services/proliantservices
http://h20219.www2.hp.com/services/us/en/warranty/carepack-servers-proliant.html

HPC Interconnects

NOTE: High Performance Computing (HPC) interconnect technologies are available for the DL165 G5p under the Cluster Platform product portfolio. These high-speed interconnects are fully supported by HP when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPC Clusters with InfiniBand, Gigabit Ethernet or Myrinet Interconnects: http://www.hp.com/techservers/clusters/ucp/index.html

HPC Interconnects	InfiniBand	PCI-Express adapters
	Gigabit Ethernet	Use embedded ports or optional 10GbE NICs

Non-Hot Plug Serial ATA (SATA) Models

Entry Model HP DL165 G5p 2376 2.3 GHz, 2GB, Non-Hot Plug SATA (1P) 507549-001 Efficiency Model HP DL165 G5p 2374HE 2.2 GHz, 2GB LP, Non-Hot Plug SATA (1P) 507547-001	Processor(s) One of the following depending on model	(1) AMD Opteron™ processor Model 2376 (2.3 GHz, 75W ACP) (1) AMD Opteron™ processor Model 2374HE (2.2 GHz, 55W ACP)
	Cache Memory	6MB shared Level 3 cache
	Memory One of the following depending on model	2GB (2 x 1GB) Registered PC2-6400 DDR2 DIMMs (800MHz) with Advanced ECC capabilities 2GB (2 x 1GB) Low Power Registered PC2-5300 DDR2 DIMMs (667MHz) with Advanced ECC capabilities
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Embedded SATA Controller
	Hard Drive	(1) 160GB NHP SATA HDD
	Internal Storage	SATA: 3TB maximum
	Optical Drive	None Ships Standard (Optional DVD-ROM, DVD/CD RW)
	Form Factor	Rack (1U)

Hot Plug Serial ATA (SATA)/Serial Attached SCSI (SAS) Models

Performance Model HP DL165G5p 2384 2.7 GHz, 8 GB, Hot Plug (2P) 507551-001 Base Model HP DL165G5p 2380 2.5 GHz, 4 GB, Hot Plug (1P) 507550-001	Processor(s) One of the following depending on model	(2) AMD Opteron™ processor Model 2384 (2.7 GHz, 75W ACP) (1) AMD Opteron™ processor Model 2380 (2.5 GHz, 75W ACP)
	Cache Memory	6MB shared Level 3 cache
	Memory One of the following depending on model	4GB (4 x 2GB) Registered PC2-6400 DDR2 DIMMs (800MHz) with Advanced ECC capabilities 4GB (2 x 2GB) Registered PC2-6400 DDR2 DIMMs (800MHz) with Advanced ECC capabilities
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP 4 Internal Port SAS HBA with RAID
	Hard Drive	None ship standard (up to 4 Hot Plug SATA or SAS drives supported)
	Internal Storage One of the following depending on model	SATA: 4.0TB Maximum SAS: 4.0TB Maximum
	Optical Drive	None Ships Standard (Optional DVD-ROM, DVD/CD RW)
	Form Factor	Rack (1U)

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.
NOTE: FIO indicates that this option is only available as a Factory Installable Option.

Step 1: Base Configuration

	Non-Hot Plug SATA Model	
	HP ProLiant DL165 G5p Non-Hot Plug SATA Rack Chassis	495842-B21
	Factory Integrated Model ships with:	
	HP NC362i Integrated Dual Port Gigabit Server Adapter	
	One available PCI-Express slots, including one full-length/full height slot	
	HP embedded SATA controller	
	650 Watt Power Supply	
	6 Fixed, Non-Redundant Fans	
	Rack (1U), (1.75 in / 4.45 cm) Fixed Mounting Rails	
	Hot Plug SATA/SAS Model	
	HP ProLiant DL165 G5p Hot Plug SATA/SAS Rack Chassis	495841-B21
	Factory Integrated Model ships with:	
	HP NC362i Integrated Dual Port Gigabit Server Adapter	
	One full-length/full height PCI-Express slot houses the SATA/SAS storage controller	
	650 Watt Power Supply	
	6 Fixed, Non-Redundant Fans	
	Rack (1U), (1.75 in / 4.45 cm) Fixed Mounting Rails	

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

Processors	AMD Opteron™ processor Model 2393SE (3.1GHz, 105W ACP), FIO	500062-L21
	AMD Opteron™ processor Model 2389 (2.9GHz, 75W ACP), FIO	500049-L21
	AMD Opteron™ processor Model 2384 (2.7GHz, 75W ACP), FIO NOTE: If 2 processors are desired, select one 500064-L21 and one 500064-B21.	500064-L21
	AMD Opteron™ processor Model 2381HE (2.5GHz, 55W ACP), FIO	500058-L21
	AMD Opteron™ processor Model 2380 (2.5GHz, 75W ACP), FIO NOTE: If 2 processors are desired, select one 500060-L21 and one 500060-B21.	500060-L21
	AMD Opteron™ processor Model 2377EE (2.3GHz, 50W ACP), FIO	536530-B21
	AMD Opteron™ processor Model 2376 HE (2.3GHz, 55W ACP), FIO NOTE: If 2 processors are desired, select one 507540-L21 and one 507540-B21.	507540-L21
	AMD Opteron™ processor Model 2376 (2.3GHz, 75W ACP), FIO NOTE: If 2 processors are desired, select one 500056-L21 and one 500056-B21.	500056-L21

	AMD Opteron™ processor Model 2374 HE (2.2GHz, 55W ACP), FIO	500051-L21
	NOTE: If 2 processors are desired, select one 500051-L21 and one 500051-B21.	
Memory	NOTE: DIMM banks are active only when the corresponding processor socket is populated.	
	2 GB REG PC2-6400 2 x 1 GB Kit	497763-B21
	2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
	4 GB REG PC2-6400 2 x 2 GB Kit	497765-B21
	4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
	8 GB REG PC2-6400 2 x 4 GB Kit	497767-B21
	8 GB REG PC2-6400 2 x 4 GB Low Power Kit	504351-B21
	8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
	16 GB REG PC2-5300 2 x 8 GB Kit	408855-B21
Hard Drive	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.	
	NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	Serial-ATA (SATA) Non-Hot Plug Hard Drives (Non-Hot Plug Models Only)	
	SATA Non-Hot Plug 3.5" Entry (ETY) Drives	
	HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD	458947-B21
	SATA Non-Hot Plug 3.5" Midline (MDL) Drives	
	HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD	462595-B21
	HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD	458941-B21
	HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD	458939-B21
	SATA Hot Plug 3.5" Midline (MDL) Solid State Drives	
	HP 60GB 3G SATA 3.5in MDL 1y Wty SSD	570761-B21
	HP 120GB 3G SATA 3.5in MDL 1y Wty SSD	570763-B21
	3.5" SATA Non-Hot Plug Drives	
	HP 500GB 1.5G SATA 7.2K NHP 3.5" HDD, FIO	404469-B21
	HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD	411276-B21
	HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD	411275-B21
	NOTE: The previous generation of 1.5G SATA drives are still supported.	

Configuration Information - Factory Integrated Models

Storage Controllers	NOTE: Storage Controller only required if 445148-B21 is selected in Step 1 above.	
	HP Smart Array E500/256MB Controller with Battery, FIO NOTE: Customers can only order one Smart Array E500/256MB Controller and one Battery-backed write cache upgrade (P/N 383280-B21) for the HP ProLiant DL165 G5p server based on battery space.	462105-B21
	HP Smart Array E200/128 BBWC Controller	411508-B21
	HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.	416096-B21
	HP SC40Ge SAS HBA, FIO NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.	449176-B21
	HP SA-P400 and SA-E500 24 In Battery Cable Kit NOTE: This option kit contains a 24" battery cable and adhesive material for installing a battery into the following servers if a Smart Array E500 is integrated outside of the factory. For all solutions, please refer to the HP ProLiant QuickSpecs and User's Manual for detailed installation instruction.	417836-B21
	Battery-backed write cache NOTE: When installing a battery-backed write cache module, the HP Smart Array E500 must be installed in the full-length PCI slot. 256MB Battery-backed write cache upgrade for RAID 5 support.	383280-B21

Step 3: Choose Additional Factory Integratable Options

Backplane Option	Hot Plug HDD Backplane 1U 2S Kit NOTE: Installation of the Hot Plug Backplane 1U 2S Kit (445985-B21) is required if ordering third or fourth Hard Drives for Hot Plug models only in Step 1 above.	445985-B21
Power Supplies	HP 1200W High Efficiency Power Supply Kit, FIO NOTE: Selection of the HE Power Supply Unit will remove the 650 Watt standard power supply and requires the purchase of Power Supply Backplane (P/N 453652-B21).	453650-B21
	Power Options	
	Power Supply Backplane, FIO NOTE: This backplane must be ordered with the high efficiency power supply (P/N 453650-B21).	453652-B21

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional "Core Options" and "Additional Options", please refer to the options sections below.

Core Options

NOTE: Some options may not be available for factory integration. Please contact an HP sales representative for additional information.

Processor	AMD Opteron™ processor Model 2393SE (3.1GHz, 105W ACP)	500062-B21
	AMD Opteron™ processor Model 2389 (2.9GHz, 75W ACP)	500049-B21
	AMD Opteron™ processor Model 2384 (2.7GHz, 75W ACP)	500064-B21
	AMD Opteron™ processor Model 2381HE (2.5GHz, 55W ACP)	500058-B21
	AMD Opteron™ processor Model 2380 (2.5GHz, 75W ACP)	500060-B21
	AMD Opteron™ processor Model 2377EE (2.3GHz, 50W ACP)	536530-B21
	AMD Opteron™ processor Model 2376 HE (2.3GHz, 55W ACP)	504540-B21
	AMD Opteron™ processor Model 2376 (2.3GHz, 75W ACP)	500056-B21
	AMD Opteron™ processor Model 2374 HE (2.2GHz, 55W ACP)	500051-B21
Memory (DIMMs)	NOTE: DIMM banks are active only when the corresponding processor socket is populated.	
	2 GB REG PC2-6400 2 x 1 GB Kit	497763-B21
	2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
	4 GB REG PC2-6400 2 x 2 GB Kit	497765-B21
	4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
	8 GB REG PC2-6400 2 x 4 GB Kit	497767-B21
	8 GB REG PC2-6400 2 x 4 GB Low Power Kit	504351-B21
	8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
	16 GB REG PC2-5300 2 x 8 GB Kit	408855-B21
Optical Drives	DVD-ROM Drive Optical Drive	447889-B21
	DVD/CD RW Drive Optical Drive	447891-B21
Hard Drives	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.	
	NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	Serial-ATA (SATA) **Non-Hot Plug Hard Drives** (Non-Hot Plug Models Only)	
	SATA Non-Hot Plug 3.5" Midline (MDL) Drives	
	HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD	462595-B21
	HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD	458941-B21
	HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD	458939-B21
	SATA Non-Hot Plug 3.5" Entry (ETY) Drives	
	HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD	458947-B21
	Serial-ATA (SATA) **Hot Plug Hard Drives** (SATA/SAS Hot Plug Models Only)	
	SATA Hot Plug 3.5" Entry (ETY) Drives	

HP 160GB 3G SATA 7.2K 3.5" ETY HDD	458945-B21
SATA Hot Plug 3.5" Midline (MDL) Drives	
HP 1TB 3G SATA 7.2K 3.5" MDL HDD	454146-B21
HP 750GB 3G SATA 7.2K 3.5" MDL HDD	458930-B21
HP 500GB 3G SATA 7.2K 3.5" MDL HDD	458928-B21
HP 250GB 3G SATA 7.2K 3.5" MDL HDD	458926-B21
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html	
3.5" SATA Hot Plug Drives	
HP 750GB 1.5G SATA 7.2K 3.5" HDD	432341-B21
HP 500GB 1.5G SATA 7.2K 3.5" HDD	395473-B21
HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21
HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
3.5" SATA Non-Hot Plug Drives	
HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD	411276-B21
HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD	411275-B21
NOTE: The previous generation of 1.5G SATA drives are still supported. NOTE: Please see the QuickSpecs for Technical Specification and additional information: http://h18000.www1.hp.com/products/quickspecs/11940_na/11940_na.html	
SATA Hot Plug 3.5" Midline (MDL) Solid State Drives	
HP 60GB 3G SATA 3.5in MDL 1y Wty SSD	570761-B21
HP 120GB 3G SATA 3.5in MDL 1y Wty SSD	570763-B21
NOTE: Please see QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13415_na/13415_na.html	
SAS Hot Plug 3.5" Enterprise (ENT) Drives	
HP 600GB 6G SAS 15K 3.5" DP ENT HDD	516828-B21
HP 450GB 6G SAS 15K 3.5" DP ENT HDD	516816-B21
HP 450GB 3G SAS 15K 3.5" DP ENT HDD	454232-B21
HP 300GB 6G SAS 15K 3.5" DP ENT HDD	516814-B21
HP 300GB 3G SAS 15K 3.5" DP ENT HDD	416127-B21
HP 146GB 3G SAS 15K 3.5" DP ENT HDD	384854-B21
SAS Hot Plug 3.5" Midline (MDL) Drives	
HP 1TB 3G SAS 7.2K 3.5" DP MDL HDD	461137-B21
HP 750GB 3G SAS 7.2K 3.5" DP MDL HDD	461135-B21
NOTE: The purchase of SAS HBA or array controller is required. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html	

Core Options

Communications	Gigabit Ethernet Adapters	
	HP NC112T PCIe Gigabit Server Adapter	503746-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
	HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21
	10 Gigabit Ethernet Adapters	
	HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21
	NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each NC522SFP adapter.	
	NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	

Additional Options

Remote Management	HP Lights-Out 100i Advanced Pack	
	HP LO100i Advanced Pack, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	530521-B21
	NOTE: Flexible and volume quantity (AKA) license kits are available for the Lights-Out 100i Advanced Pack licenses as well as Electronic License To Use (E-LTU). AKA Tracking licenses require a 100 unit minimum forecast at initial contract signing. For these additional part numbers, please refer to QuickSpecs at this link for more information: www.hp.com/go/lo100	
HP Insight Software	HP Insight Control for Linux	
	HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic	T9084BAE
	HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	464423-B22
	HP Insight Control for Linux, Media pack (DVD) - No licenses included	464422-B22
	NOTE: Media pack DVD contains HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Licenses must be acquired separately NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ic-linux (click on Download button).	
	NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent. NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html	
	HP Insight Control server deployment	
	HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates	T9082AAE
	HP Insight Control server deployment 1-Server License including 1 year 24x7 Technical Support and Updates	452151-B21
	NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent. NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. NOTE: For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html	

Additional Options

Hot Plug HDD Backplane Option	Hot Plug HDD Backplane 1U 2S Kit NOTE: Installation of the Hot Plug Backplane 1U 2S Kit (445985-B21) is required if ordering third or fourth Hard Drives for Hot Plug models only.	445985-B21
Storage Controllers	NOTE: The addition of storage controllers for internal hard drive use is intended for use ONLY with the Hot Plug SATA/SAS Model Chassis (495841-B21).	
	SAS Controllers	
	Smart Array E200 Controller	
	HP Smart Array E200/128 BBWC Controller	411508-B21
	Smart Array P400 Controller	
	HP Smart Array P400/256MB Controller NOTE: Customers can only order one Smart Array P400/256MB Controller and one Battery-backed write cache upgrade (P/N 383280-B21) for the HP ProLiant DL165 G5 server based on battery space.	405132-B21
	HP Smart Array P400/512MB BBWC Controller NOTE: Customers can only order one Smart Array P400/512MB BBWC Controllers for the HP ProLiant DL165 G5p server based on battery space.	411064-B21
	Smart Array P800 Controller	
	HP Smart Array P800/512 BBWC Controller	381513-B21
	NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12460_na/12460_na.html (Smart Array E200 Controller) http://h18000.www1.hp.com/products/quickspecs/12400_na/12400_na.html (Smart Array P400 Controller) http://h18000.www1.hp.com/products/quickspecs/12616_na/12616_na.html (Smart Array P800 Controller)	
	Optional Upgrades	
	512MB Battery-backed write cache upgrade NOTE: Contains battery and memory module. For Smart Array P400 Controller.	405148-B21
	HP SA-P400 and SA-E500 24 In Battery Cable Kit NOTE: This option kit contains a 24" battery cable and adhesive material for installing a battery into the following servers if a Smart Array E500 is integrated outside of the factory. For all solutions, please refer to the HP ProLiant QuickSpecs and User's Manual for detailed installation instruction.	417836-B21
	SAS HBA	
	HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. NOTE: PCI-Express SAS HBA. NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/12617_na/12617_na.html (SC44Ge HBA)	416096-B21
	SCSI HBA	

Additional Options

	HP SC11Xe Host Bus Adapter NOTE: Recommended HBA for SCSI tape drive connect. NOTE: Please see the following QuickSpecs for Technical Specifications additional information: http://h18000.www1.hp.com/products/quickspecs/12566_na/12566_na.html (SC11Xe HBA)	412911-B21
HPC Specific Options	HP IB 4X DDR PCI-e Dual Port HCA	448397-B21
	HP10GbE PCI-e G2 Dual Port Network Adapter	516937-B21
	HP 10 GbE PCI-e G2 Dual Port Adapter	516937-B21
	NOTE: For HPC interconnect adapters please see the HPC Interconnect section of this QuickSpecs.	
Tape Storage	NOTE: For the complete listing of Tape Drive offerings, please see: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html	
	Tape Drives	
	USB Rack-Mount Tape Solutions	
	HP StorageWorks 1U USB Rack-Mount Kit with one DAT 160 USB Tape Drive NOTE: Pre-configured with one DAT 160 USB tape drive.	AG703A
	SAS Rack-Mount Tape Solutions NOTE: HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape.	
	HP StorageWorks 1U SAS Rack-Mount Kit with one LTO-4 Ultrium 1760 NOTE: Pre-configured with one LTO-4 Ultrium 1760 SAS tape drive.	EH946A
	HP StorageWorks 1U SAS Rack-Mount Kit NOTE: Supports up to (2) half-height SAS tape drives.	AE459A
	HP StorageWorks DAT 160 SAS Internal Tape Drive NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A).	Q1587A
	HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A).	DW085A
	HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A).	EH847A
	SCSI Rack-Mount Tape Solutions NOTE: SCSI Controller required. HP recommends purchasing the HP SC11Xe HBA (412911-B21) for a dedicated SCSI HBA for tape.	
	HP StorageWorks 1U SCSI Rack-mount kit with one LTO-2 Ultrium 448 SCSI Tape Drive (Carbonite) NOTE: Pre-configured with one LTO-2 Ultrium 448 SCSI tape drive.	DW028B
	HP StorageWorks 1U SCSI Rack-mount kit with one LTO-3 Ultrium 920 NOTE: Pre-configured with one LTO-3 Ultrium 920 SCSI tape drive.	EH903A
	HP StorageWorks 3U SCSI Rack-Mount with 1 LTO-4 Ultrium 1840 Tape Drive NOTE: Pre-configured with one LTO-4 Ultrium 1840 SCSI tape drive.	EH926A
	NOTE: For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: http://www.hp.com/go/connect	
	Tape Autoloaders	

	HP StorageWorks DAT Autoloader	
	HP StorageWorks DAT 72x10 tape autoloader	AE313B
	HP StorageWorks 1/8 G2 Tape Autoloader	
	HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader	AH558A
	HP StorageWorks 1/8 G2 LTO-2 Ultrium 448 Tape Autoloader	AH164A
	HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions.	AH166A
	NOTE: Please reference the QuickSpecs for Technical Specifications and http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at: http://www.hp.com/go/ebs.	
	Tape Libraries	
	HP StorageWorks MSL2024 Tape Library	
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ033A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library	AK378A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 960 SCSI Drive Library	AG115A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
	HP StorageWorks MSL2024 1 LTO-2 Ultrium 448 SCSI Drive Library	AG116A
	HP StorageWorks MSL4048 Tape Library	
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ035A
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library	AK380A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 960 SCSI Drive Library	AG322A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library	AH560A
Disk-Based Backup	**RDX Removable Disk Backup**	
	HP StorageWorks RDX160 External Removable Disk Backup System NOTE: 160GB of Disk Storage	AJ766A
	HP StorageWorks RDX320 External Removable Disk Backup System NOTE: 320GB of Disk Storage	AJ768A
	HP StorageWorks RDX500 External Removable Disk Backup System NOTE: 500GB of Disk Storage	AJ935A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13036_na/13036_na.html	
	D2D Backup	
	HP StorageWorks D2D2504i Backup System NOTE: 4 TB raw capacity/3 TB useable capacity.	EJ002A
	HP StorageWorks D2D130 Backup System with LTO-3 Ultrium 920 SAS Tape Drive NOTE: 3TB of Disk Storage	EH952A
	HP StorageWorks D2D2503i Backup System NOTE: 3TB of Disk Storage	EH945A

	HP StorageWorks D2D4004i Backup System NOTE: 4.5TB of Disk Storage NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://www.hp.com/go/d2d.	EH938A
StorageWorks Options	StorageWorks Fibre Channel HBA NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html	
	Brocade Fibre Channel HBAs	
	HP 81B PCIe 8Gb FC Single Port HBA	AP769A
	HP 82B PCIe 8Gb FC Dual Port HBA	AP770A
	HP 41B PCIe 4Gb FC Single Port HBA	AP767A
	HP 42B PCIe 4Gb FC Dual Port HBA	AP768A
	Emulex Fibre Channel HBAs	
	HP StorageWorks 81E 8Gb Single Port PCI-e FC HBA	AJ762A
	HP StorageWorks 82E 8Gb Dual Port PCI-e FC HBA	AJ763A
	HP StorageWorks FC2142SR 4Gb PCI-e FC HBA	A8002A
	HP StorageWorks FC2242SR Dual Channel 4Gb PCI-e FC HBA	A8003A
	QLogic Fibre Channel HBAs	
	HP StorageWorks 81Q 8Gb Single Port PCI-e FC HBA	AK344A
	HP StorageWorks 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
	HP StorageWorks FC1142SR 4Gb PCI-e FC HBA	AE311A
	HP StorageWorks FC1242SR Dual Channel 4Gb PCI-e FC HBA	AE312A
	StorageWorks SCSI HBA	
	HP U320e SCSI Host Bus Adapter NOTE: Recommended HBA for MSL SCSI Tape Library connect.	AH627A
HP StorageWorks Modular Smart Array	HP StorageWorks 50 Modular Smart Array	
	HP StorageWorks 50 Modular Smart Array NOTE: Rack-mountable 10 SFF drive enclosure with single I/O module, redundant hot plug power supplies and hot plug fans.	364430-B21
	HP StorageWorks 60 Modular Smart Array	
	HP StorageWorks 60 Modular Smart Array NOTE: Rack-mountable 12-drive (3.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12627_na/12627_na.html	418408-B21
	HP StorageWorks 70 Modular Smart Array	
	HP StorageWorks 70 Modular Smart Array	418800-B21

NOTE: Rack-mountable 25-drive (2.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.
NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12652_na/12652_na.html

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Uninterruptible Power Systems

HP Rack-mountable UPS

HP R1500 G2 UPS

HP, R1.5kVA UPS, 1U	AF419A

NOTE: Please see QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12507_na/12507_na.html
NOTE: For additional information on sizing your server, please reference:
http://www.upssizer.com

HP R3000 UPS Uninterruptible Power System

HP R3000 UPS	AF444A

NOTE: Please see UPS QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/13129_na/13129_na.html

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HP Monitored Power Distribution Units

Monitored PDUs

HP Monitored Power Distribution Unit: Full Rack Version

HP 17.3 kVA S2324 Monitored PDU- dual input, 3Ø, 24A	AF503A
HP 8.6 kVA S1324 Monitored PDU- single input, 3Ø, 24A	AF504A
HP 16.6 kVA S2140 Monitored PDU- dual input, 1Ø, 40A	AF505A
HP 8.3 S1140 Monitored PDU- single input, 1Ø, 40A	AF506A

HP Monitored Power Distribution Unit: Half Rack Version

HP 17.3 kVA S348 Monitored PDU- single input, 3Ø, 48A	AF916A
HP 4.9 kVA S124 Monitored PDU- single input, 1Ø, 24A	AF914A

Modular Power Distribution Units 1U/0U (Up to 32 outlets)

NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 G2 and 9000 series racks).

HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC) NOTE: This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR.	252663-D71
HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC)	252663-D72
HP Modular Power Distribution Units (mPDU), High Volt Model, 40A (200-240 VAC) NOTE: This mPDU (252663-B21), 40A model has a hardwired input.	252663-B21
HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) NOTE: This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.	252663-B24

Additional Options

NOTE: Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords:
http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.html
NOTE: For additional information on HP Power Distribution Units including accessories please go to: www.hp.com/go/pdu.

HP Rack Options	**HP KVM Switch Options**	
	HP 1x4 Console Switch	AF611A
	HP PS2 Server Console Cable, 6 foot, 2-Pack	AF612A
	HP USB Server Console Cable, 6 foot, 2-Pack	AF613A
	NOTE: required for supporting USB peripheral.	
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	
USB Options	HP USB Internal Cable Kit	451363-B21
	1.44MB External USB Floppy Drive All	DC141B
	USB Floppy Drive	DC361B
	USB P/S2 Optical Mouse	DC369A
	USB Standard Keyboard	DT528A#ABA
Service and Support Offerings (HP Care Pack Services)	**Hardware Services 4-Hour On-site Service**	
	13-Hour x 5-Day Coverage, 3 Years, Electronic	U9509E
	24-Hour x 7-Day Coverage, 3 Years, Electronic	U9510E
	Hardware Services Next Business Day On-Site Service	
	9-Hour x 5-Day Coverage, 3 Years, Electronic	U9508E
	Hardware Services 6-Hour Call to Repair On-Site Service	
	9-Hour x 5-Day Coverage, 3 Years, Electronic	U9511E
	Hardware Installation, Electronic	U9520E
	NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/carepack	

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

HP ProLiant DL165 G5p (all models)

Standard Memory

2 GB (2 x 1 GB) PC2-6400 DIMM memory, with Advanced ECC Capabilities memory installed.

Maximum Memory

Up to 128GB memory is available with the optional installation of PC2-5300 Registered DIMM memory kits.
Memory should be installed in pairs and matched for optimum performance.

NOTE: Chart does not represent all possible memory configurations.

NOTE: DIMM banks are active only when the corresponding processor socket is populated.

Memory	Slot							
	1	2	3	4	5	6	7	8
Standard (2 GB)	1 GB	1 GB	Empty	Empty	Empty	Empty	Empty	Empty
Maximum (128 GB)	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB
	9	10	11	12	13	14	15	16
	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB

Following are memory options available from HP:

2 GB REG PC2-6400 2 x 1 GB Kit	497763-B21
2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
4 GB REG PC2-6400 2 x 2 GB Kit	497765-B21
4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
8 GB REG PC2-6400 2 x 4 GB Kit	497767-B21
8 GB REG PC2-6400 2 x 4 GB Low Power Kit	504351-B21
8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
16 GB REG PC2-5300 2 x 8 GB Kit	408855-B21

1-4 Non-hot plug 3.5" SATA or Hot-plug SAS/SATA hard drive bays

A Optional DVD-ROM, or DVD/CD RW

Drive Support

Removable Media

	Quantity Supported	Position Supported	Controller
DVD-ROM	Up to 1	A	Integrated IDE (ATAPI) (optional)
DVD/CD RW	Up to 1	A	Integrated IDE (ATAPI) (optional)

Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SATA Non-Hot Plug 3.5" Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
160GB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller

SATA Non-Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
750GB 3G SATA 7.2K 500GB 3G SATA 7.2K 250GB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller

3.5" SATA Non-Hot Plug Drives

	Quantity Supported	Position Supported	Controller
500GB 1.5G SATA,FIO 250GB 1.5G SATA 7.2K 160GB 1.5G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller

SATA Hot Plug 3.5" Entry (ETY) Drives

NOTE: Installation of the Hot Plug Backplane 1U 2S Kit (445985-B21) is required if ordering third or fourth Hard Drives for Hot Plug models only.

	Quantity Supported	Position Supported	Controller
160GB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller

SATA Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1TB 3G SATA 7.2K 750GB 3G SATA 7.2K 500GB 3G SATA 7.2K 250GB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller
120GB 3G SATA 60GB 3G SATA	Up to 4	1-4	HP SC40Ge 4-Port Internal SAS HBA with RAID 0, 1 NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS HP Smart Array P400 Controller HP Smart Array P800 Controller

SAS Hot Plug 3.5" Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K 450GB 6G SAS 15K 450GB 3G SAS 15K 300GB 3G SAS 15K 146GB 3G SAS 15K	Up to 4	1-4	HP 4 Internal Port SAS HBA with RAID

Tape and Disk-Based Backup

NOTE: For a complete listing of compatible tape and disk-based backup offerings, please visit: http://www.hp.com/go/connect
NOTE: SAS Tape Drives: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

	Position Supported	Controller	Controller Part Number
HP StorageWorks SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72	External	HP SC11Xe Host Bus Adapter	412911-B21

Storage

DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit			
HP StorageWorks USB Tape Drives, External DAT 40 USB DAT 72 USB DAT 160 USB 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP StorageWorks SAS Tape Drives, External DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS LTO-4 Ultrium 1840 SAS 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC44Ge Host Bus Adapter	416096-B21
HP StorageWorks SCSI Tape Automation, External DAT 72x10 Autoloader 1/8 G2 Autoloader MSL2024 MSL4048	External	HP SC11Xe Host Bus Adapter HP U320e SCSI Host Bus Adapter NOTE: Recommended for MSL tape libraries.	412911-B21 AH627A
HP StorageWorks SAS Tape Automation, External 1/8 G2 Autoloader MSL2024 MSL4048	External	HP SC44Ge Host Bus Adapter	416096-B21
HP StorageWorks Fibre Tape Automation, External MSL2024 MSL4048 MSL8096	External	Please consult the EBS connectivity matrix at: http://www.hp.com/go/ebs for detailed connectivity information.	N/A
HP StorageWorks RDX Removable Disk Backup System, External RDX160 RDX320 RDX500	External	USB 2.0 port	N/A

HP StorageWorks D2D Backup Systems D2D120 D2D130 D2D2500i D2D4000i	External	Embedded Network Controller	N/A

Power Specifications

Operational Input Voltage Range (Vrms)	90Vac to 264Vac full range at 25oC ambient
Frequency Range (Nominal) (Hz)	47 Hz to 63 Hz
Power Output	650W Nominal
Server Power Cords	One 6' Highline (IEC-IEC) power cord ships standard NOTE: HP ProLiant DL servers no longer ship standard with NEMA power cords (163719-002) that allow connection to 110V US wall outlets in a home or office. HP ProLiant DL servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant DL server using a 110V receptacle (NEMA-15), the NEMA power cord (227099-001) must be ordered separately. If customers require a local power cord, they can check the power cord matrix for the appropriate cord. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix.

System Unit	Dimensions (H x W x D) (with bezel)	1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.20 cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	37.00 lb (16.78 kg)
		Minimum (one hard drive, power supply, and processor installed)	30.00 lb (13.69 kg)
	Input Requirements (per 650W power supply)	Rated Line Voltage	100-127 VAC, 200-240 VAC
		Rated Input Current	10.0 A (at 115 VAC), 5.5 A (at 230 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	852.16 W (at 100 VAC), 805.03W (at 200 VAC)
	BTU Rating	Maximum	2217.89 BTU/hr (at 100 VAC), 2217.89 BTU/hr (at 200 VAC)
	Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient - Click on the system of interest. Example: DL165 G5p - Follow the instructions of the next screens.	
	Power Supply Output (per power supply)	Rated Steady-State Power	650 W (at 100 VAC), 650 W (at 200 VAC)
		Maximum Peak Power	700 W (at 100 VAC), 700 W (at 200 VAC)
	Optional High Efficiency Power Supply Specifications		
	Input Requirements (per power supply)	Rated Line Voltage	90-132 VAC, 200-240 VAC
		Rated Input Current	9.4 A (at 115 VAC), 7.8 A (at 230 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	1075 W (at 100 VAC), 1375W (at 200 VAC)
	BTU Rating	Maximum	3070.93 BTU/hr (at 100 VAC), 4094.57 BTU/hr (at 200 VAC)
	Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient - Click on the system of interest. Example: DL165 G5p - Follow the instructions of the next screens.	

Power Supply Output (per power supply)	Rated Steady-State Power	900 W (at 100 VAC), 1200 W (at 200 VAC)
	Maximum Peak Power	900 W (at 100 VAC), 1200 W (at 200 VAC)
System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	Idle	
	LWAd	6.82 B
	LpAm	51.93 dBA
	Operating	
	LWAd	6.84 B
	LpAm	51.93 dBA
Emissions Classification (EMC)	**FCC Rating**	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

HP 160GB 1.5G SATA 7.2K NHP 3.5" ETY HDD 458947-B21	160-GB 7.2K	Capacity	160,041 MB	
		Height	1.028 in (2.61 cm)	
		Width	4.0 in (10.16 cm)	
		Depth	5.787 in (147.0 mm)	
		Interface	Serial ATA	
		Transfer Rate Synchronous (Maximum)	1.5Gb/s	
		Native Command Queuing	N/A	
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<11 ms
			Full-Stroke	23.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	312,581,808
		Operating Temperature	41° to 131° F (5° to 55° C)	

Embedded SATA Controller	Drives Supported	Up to 4 SATA devices
	Channels	4 1.5Gb SATA
	Storage Capacity	3.0TB internal storage
	Data Transfer Method	32-bit/33-MHz PCI bus-master
	Maximum SATA Channel Transfer Rate	1.5Gb/s per channel
	Maximum Transfer Rate per PCI Bus (peak)	266 MB/s per channel
	Protocols	SATA
		PIO Mode[0-4]
	Cable	SATA
	Internal ATA Connectors	Four SATA connectors

Technical Specifications

HP 8 Internal Port SAS HBA with RAID	Drives Supported	Up to 4 SATA/SAS drives	
	Channels	4	
	Storage Capacity	1.8TB SAS, 3.0TB SATA	
	Data Transfer Method	PCI-Express	
	Maximum SAS Channel Transfer Rate	3Gb/s per channel	
	Maximum SAS transfer rate	300Mb/sec per port	
	Protocols Supported	SSP, STP, SMP	
	Internal Connectors	1 SAS	
Embedded NC362i Dual Port Gigabit Server Adapter	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3 1000Base-T	
		IEEE 802.3 100Base-TX	
	Data Transfer Method	PCI-X	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP (2 Pair); up to 328 ft (100 m)
Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.	

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.